

XI.—On *Indian Species of Land-Shells belonging to the Genera Helix, Linn., and Nanina, Gray.* By W. T. BLANFORD, A.R.S.M., F.G.S.

IN the course of the last few years, much has been published concerning the distribution of Indian and Burmese land-shells, and a large number of novel forms have been described, chiefly by Mr. W. H. Benson. The greater portion of this information, however, has necessarily been derived from an examination of the shells alone, and has left untouched the important question of the forms of the soft parts in the species described. In the case of forms referred to the genus *Helix* especially, the determination of the presence or absence of a mucous pore at or near the posterior termination of the foot is essential for the natural classification of the different species. I have had opportunities, during the last few years, of collecting several Indian and Burmese snails in various parts of the country; and, although my notes on the forms of the animals occupying them are very imperfect, they may suffice to correct some of the errors which prevail, in conchological works, in attributing various species to the different subgenera of *Helix* and *Nanina*\*.

I hope to communicate longer notices of the species enumerated below at some future time; for the present I have not the data at hand, and I therefore confine myself to a list of the species actually observed, with the localities from which I have obtained them; and I have added in italics the names of other species so closely allied to those observed that no doubt can exist as to their subgeneric affinity. With one or two exceptions, which are noted, the observations were made by myself on the living animals. The subgenera in which I have classed the species noted are those of Albers and Pfeiffer, somewhat modified, with a few necessary additions.

The genus *Nanina* is naturally divided into two groups of subgenera by the structure of the mucous pore itself; and this subdivision is fully borne out by the characters of the shells belonging to the two groups, although, as is the case more or less throughout the *Helicidæ*, there are some indications of a passage from one group to the other. In the first of these sections the foot is narrow, and more or less abruptly truncated posteriorly; the mucous pore is situated at the vertical or sub-vertical posterior termination, and has above it a projecting

\* Thus, by Albers, *H. Huttoni*, Pfr., *H. capitium*, Bens., and *H. Guerini*, Pfr., are incorrectly classed under *Nanina*; while *Nanina Tranquebarica*, Fabr., and *N. ampulla*, Bens., are arranged under *Helix*. Adams and, I think, Pfeiffer, fall into similar errors, which, indeed, can only be guarded against by an examination of the animals.

horn-shaped lobe, of very variable length, and possessing a certain amount of contractility. Of this group, which is probably allied to *Stenopus*\* (if, indeed, that name ought not to be adopted for it), some of the principal Indian types are *N. vitrinoides*, Desh., *N. infula*, Bens., *N. pylaica*, Bens., and *N. ampulla*, Bens. In the other group the foot is broader, flatter, and rounded posteriorly, as in most of the true *Helices*. The mucous pore, generally of larger comparative size than in the first specified section, is situated in a groove in the centre of the upper surface of the foot, close to the posterior extremity, with no lobe whatever above or in front of it. Amongst the principal types are *N. lævipes*, Müll., *N. bistrialis*, Beck, *N. Tranquebarica*, Fabr., *N. indica*, Pfr., and *N. Thyraeus*, Bens.

Before any complete list of Indian Naninas can be made, several additional observations are necessary. Amongst the species of which notices are especially desirable are the following:—

Nanina? *Basileus*, Bens. Anamullay Hills, S. India.

N.? *Cycloplax*, Bens. Darjiling, in the Sikkim Himalaya.

N.? *Oxytes*, Bens. Cherra, in the Khasi Hills.

N.? *Orobia*, Bens. Darjiling.

N.? *serrula* †, Bens. Khasi Hills.

N.? *climacterica*, Bens. Khasi Hills and Arakan.

N.? *anceps*, Gould. Tenasserim.

N.? *infrendens*, Gould. Molmain.

N.? *Bombax*, Bens. Molmain.

H.? *radicicola*, Bens. Landour and Darjiling.

H.? *bifoveata*, Bens. Tenasserim.

H.? *monticola*, Hutt. Western Himalaya.

The three species of *Sophina* ‡ described by Mr. Benson, from Molmain, besides several of the species from Ceylon.

In the following list, all species of which I have neither seen the animals myself, nor authentic drawings of them, are marked by italics, as are also all localities not verified by myself, by my brother, Mr. H. F. Blanford, or by Mr. W. Theobald,

\* The name *Nanina* has been so generally employed by conchologists for the great genus of shell-bearing Helicidæ characterized by the presence of a mucous pore, that, although objectionable both on account of its signification and of other terms having unquestionable priority, no good purpose could now be served by attempting to change it.

† *H. Bensoni*, v. d. Busch, is the same shell as *N.? serrula*, Bens., if the specimen of the first-named in Mr. Cuming's cabinet is authentic, which I believe it is.

‡ I am inclined to anticipate that these may very possibly prove to be Naninas.

Jun., to whom I am indebted for several of the shells mentioned\*.

Genus *NANINA*, Gray.

Section A. *Mucous pore at the truncated posterior extremity of the foot, and with a lobe above.* (?*Stenopus*, *Guilding*.)

Subgenus *MACROCHLAMYS*, Bens.

Syn. *Orobia*, Albers; *Xesta*, Pfr.

- N. vitrinoides*, *Desh.* Bengal.  
*N. semifusca*, *Desh.* S. Arcot; Trichinopoly; var. from the Kola-mullay Hills.  
*N. Perrottetii*, *Pfr.* Nilgiri Hills, S. India.  
*N. Todarum*, *W. & H. Blanf.* Nilgiri Hills, S. India.  
*N. pansa*, *Bens.* Thayet Myo, Pegu; Ava.  
*N. molecula*, *Bens.* Rangoon; Ava.  
*N. textrina*, *Bens.* Arakan and Pegu.  
*N. ligulata*, *Fér.* Bengal; Madras.  
*N. subjecta*, *Bens.* Rajmahal Hills, Bengal; Orissa.  
*N. lecythis*, *Bens.* Rajmahal Hills, Bengal; Orissa.  
*N. lubrica*, *Bens.* Darjiling.  
*N. decussata*, *Bens.* Khasi Hills (Theobald); E. Bengal.  
*N. sequax*, *Bens.* Darjiling.  
*N. rorida*, *Bens.* Darjiling.  
*N. Hodgsoni*, *Bens.* Darjiling.  
*N. Patane*, *Bens.* Darjiling.  
*N. Petasus*, *Bens.* Tenasserim (Theobald).  
*N. splendens*, *Hutt.* Western Himalaya; Parasnath Hill, in Bengal?  
*N. acerra*, *Bens.* Molmain (Theobald).  
*N. pauzillula*, *Bens.* Thayet Myo, Pegu.

I am unacquainted with *N. resplendens*, Philippi, from Mergui, in the Tenasserim provinces. Specimens which I have seen so marked from Bengal were *N. vitrinoides*, *Desh.*

The animal of *N. ligulata* differs in colour and somewhat in shape from the other species above enumerated. I am indebted to my brother, Mr. H. F. Blanford, for a drawing of it. It shows a passage into the other section of *Nanina*.

Subgenus *KALIELLA*, n. subg.

Syn. *Trochomorpha*, Albers, part.

- N. fastigiata*, *Hutt.* Western Himalayas; Nilgiri Hills.  
*N. Barrakporensis*, *Pfr.* Base of Sikkim Himalayas; Kalryenmullay Hills, near Salem, in S. India (Foote).  
*N. aspirans*, *W. & H. Blanf.* Nilgiri Hills.

\* Absence from any collections and from almost all books of reference, at the time of writing, will render these lists less full than I could have wished them to be. I trust to be able to supply omissions hereafter.

## Subgenus TROCHOMORPHA, Albers (restricted).

- N. attegia*, Bens. Irawaddy Valley, near Prome; Ava.  
*N. infula*, Bens. Lower Bengal; Orissa.  
*N. cacuminifera*, Bens. Nilgiri Hills.  
*N. arx*, Bens. Therabuin Hill, Tenasserim (Theobald).

## Subgenus DURGELLA, n. subg.

- N. levicula*, Bens. Tenasserim (Theobald); Prome, in Pegu.  
*N. mucosa*, W. & H. Blanf. Nilgiri Hills.  
*N. seposita*, Bens. Darjiling.

## Subgenus HELICARION?, Fér.

- N. ampulla*\*, Bens. Western slope of Nilgiris (Elliott); Malabar (Jerdon).

## Subgenus SESARA†, Albers.

Syn. *Tridopsis*, Pfr., part.

- N. pylaica*, Bens. Molmain.  
*N. impendens*, Gould. Molmain.  
*N. capessens*, Bens. Molmain (Theobald).

*Helix Tickelli*, Theobald, is a variety of either of the two last-named shells, with two of the teeth in the peristome blended together.

Section B. *Mucous pore above the flattened posterior extremity of the foot, and without a lobe above it.* (Ariophanta, Desmoulins.)

## Subgenus HEMIPLECTA ‡?, Albers.

- N. Tranquebarica*, Fabr. E. coast of Southern India.  
*N. Bombayana*?, Grat. E. base of Nilgiri Hills.  
*N. Belangeri*, Desh. Bombay?  
*N. Maderaspatana*, Gray. Nilgiri and other hill-groups of Southern India.  
*N. solata*, Bens. Nilgiri Hills.  
*N. bistrialis*, Beck. Madras and Trichinopoly.

*N. semirugata*, Beck, I have little doubt, is only a variety of *Tranquebarica*. *N. vitellina*, Pfr., is almost equally questionable.

\* I am indebted to Mr. Walter Elliott for a drawing of the animal of *Nanina ampulla*, Bens., which I have not myself met with. It would seem to be distinguished from *Helicarion* by the absence of the long mantle-lobes reversed over the shell; but I hesitate to separate it without further information. *Vitrina irradians*, Pfr., observed by my brother, I believe to be a true *Helicarion*, as are probably several of the other Indian *Vitriinas*, e. g. *V. gigas*, Bens.

† Classed by Albers as a subgenus of *Helix*.

‡ The type of Albers's subgenus *Hemiplecta* is *H. Humphreysiana*, Lea, which is a very different shell from any of those here attributed to the section. Perhaps also *N. Tranquebarica* and its allies should be separated from the remainder.

Subgenus *ROTULA*, Pfr. (? Albers).

- N. indica*, Pfr. Nilgiri Hills.  
*N. Shiplayi*, Pfr. Nilgiri Hills.

Subgenus *ARIOPHANTA*, Desmoulin's.

- N. interrupta*, Bens. Bengal.  
*N. Laidlayana*, Bens. Orissa.  
*N. Nicobarica*, Chemn. Cuddapah (King).  
*N. lævipēs*, Müll. Bombay.  
*N. retrorsa*, Gould. Molmain (Theobald).  
*N. Bajadera*, Pfr. Nagpur, small typical var.; Bombay, large var. (Theobald).

From an inspection of the type-specimens of both shells, I have ascertained that *N. ammonia*, Val., is founded on the type-variety of *N. Bajadera*, Pfr. I have but little doubt that *N. Himalayana*, Lea, is *N. interrupta*, Bens., the Himalayan locality being probably an error. *N. retrorsa*, Gould, appears, on the other hand, to be a good species.

Subgenus *OXYTES*, Pfr.

- N. Thyraeus*, Bens. Nilgiri Hills.  
*N. Cysis*, Bens. Nilgiri Hills.  
*N. Cycloplax*, Bens. Darjiling.  
*N. Oxytes*, Bens. Khasi Hills (Theobald).

Genus *HELIX*, Linn.

Subgenus *TACHIA*, Albers.

- H. fallaciosa*, Fér. East coast of Southern India; Ceylon.  
*H. Nilagarica*, Pfr. Nilgiri Hills.  
*H. asperella*, Pfr. Central India.  
*H. Helferi*, Bens. Andaman Islands (Haughton).  
*H. vittata*, Fér. East coast of Southern India; Ceylon.  
*H. proxima*, Fér. Caroor, in Coimbatore district (King).  
*H. delibrata*, Bens. Base of Himalayas, in Sikkim; Khasi Hills (Theobald); Arakan; Pegu.  
*H. gabata*, Gould. Molmain (Theobald).  
*H. Merguiensis*, Pfr. Molmain.

The last three should perhaps be separated as a distinct subgenus. *H. ruginosa*, Fér., appears to be merely a variety of *H. fallaciosa*, into which it passes by insensible gradations. *H. crassicostata*, Bens., is more distinct; but if it prove to be, as Pfeiffer considers it, a variety of *H. ruginosa*, it must also fall under *fallaciosa*. The animal of *H. vittata* shows no essential distinction from that of *fallaciosa*; and I can see no cause for its separation as a distinct subgenus, as suggested by Albers.

Subgenus DORCASIA?, Gray.

- H. similaris*, Fér. Thayet Myo, in Pegu; *Dacca*.  
*H. bolus*, Bens. Thayet Myo.  
*H. Peguensis*, Bens. Pegu.  
*H. Huttoni*, Pfr. Western Himalaya; Sikkim; Nilgiri Hills;  
 Pappa Hill, Ava.  
*H. tapeina*, Bens. Khasi Hills (Theobald); Pegu.  
 ?*H. rotatoria*, v. d. Busch. Pegu.  
*H. Akoutongensis*, Theobald. Akoutoung, on the Irawaddy, Pegu;  
 Thayet Myo.  
*H. Oldhami*, Bens. Arakan Hills; Ava.

I doubt much the distinctness of *H. sculpturita*, Bens., from *H. similaris*, Fér., of which the first-named appears to be a large solid variety.

Subgenus SIVELLA, n. subg.

- H. castra*, Bens. Darjiling; Balasore in Orissa; Ceylon; Arakan Hills.  
*H. lychnia*, Bens. Singapore; Nilgiri Hills (H. F. Blanford).

Subgenus THYSONOTA\*, Albers.

- H. Guerini*, Pfr. Nilgiri Hills.  
*H. crinigera*, Bens. Nilgiri Hills.

Subgenus GANESELLA, n. subg.

- H. capitium*, Bens. Rajmahal Hills, Bengal; Orissa (Theobald);  
 Ava.  
*H. variola*, Bens. Thayet Myo; Pegu.

The distinctness of these two species appears very dubious.

Subgenus PLECTOPYLIS, Bens.

- H. achatina*, Gray. Molmain.  
*H. anguina*, Gould. Mergui.  
*H. leiophis*, Bens. Akoutoung, near Prome, Pegu; Thayet Myo.  
*H. refuga*, Gould. Tenasserim Valley (dextral var., Theobald);  
 Tavoy (sinistral var.).  
*H. plectostoma*, Bens. Darjiling; Khasi Hills (Theobald); Arakan Hills; Bassein, Pegu.  
*H. pinacis*, Bens. Darjiling.  
*H. retifera*, Pfr. Nilgiri Hills.

Type-specimens of *Helix anguina*, Gould, in Mr. Cuming's collection, show that the species is quite distinct from *H. achatina*, Gray, with which, however, *H. repercussa*, Gould, is identical.

\* Classed by Albers under *Nanina*.